PDB30
SAXAGLIPTIN/METFORMIN EXTENDED-RELEASE (XR) FOR THE TYPE 2 DIABETES (T2DM) TREATMENT IN VENEZUELA: A BUDGET IMPACT ANALYSIS
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OBJECTIVES: To estimate the budget impact of the use of saxagliptin/metformin XR fixed-dose combination compared to the current treatment of people with T2DM, in Venezuela. **METHODS:** We used an MS Excel-based budget impact model assuming coverage of one million people in the health care system of Venezuela, with a 3-year time horizon. DM prevalence was obtained from published literature. Pharmaceutical expenses of oral antidiabetic agents (OADs) were analyzed excluding other medical costs. The cost of OADs was based upon list prices, expressed in Venezuelan Bolivars (VEF$) 2013 (exchange rate: 1 US-dollar = 6.30 VEF$). The market share of the different drugs was based upon QUALIDIAB Database, market studies and data provided by Bristol-Myers Squibb. A progressive increase of market share was assumed for saxagliptin/metformin XR among all the OADs; 1.14%, 2.65% and 3.0% for the 1st, 2nd and 3rd year, respectively. The budget impact is reported in terms of annual budget impact, per member per-month (PMPM) and per patient per month (PPPM). A Monte Carlo simulation (10,000 iterations) was done as part of the sensitivity analysis. **RESULTS:** the net budget impact estimated for the introduction of saxagliptin/metformin XR combined was VEF$503,807 for the first year, VEF$1,183,333 for the second year and VEF$1,353,554 for the third year; the cumulative net budget impact was VEF$3,040,703. PMPM was VEF$0.04, VEF$0.10 and VEF$0.11 for the first, second and third year respectively. PPPM was VEF$1.67, VEF$4.0 and VEF$4.65 each year, respectively. The cumulative impact in the total annual budget for oral antidiabetic agents represented an increase of 2.36%. Monte Carlo simulation showed that cumulative budget impact varied from 1.32 to 8.74%. **CONCLUSIONS:** incorporation of saxagliptin/metformin XR combination into the health care system of Venezuela, as a treatment option for people with T2DM, would have a minimal budgetary impact.

PDB31
BUDGET IMPACT ANALYSIS OF UTILIZING CANAGLIFLOZIN (CANA) FOR THE TREATMENT OF TYPE 2 DIABETES MELLITUS (T2DM) IN AN UNITED STATES HEALTH PLAN
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OBJECTIVES: CANA, an SGLT2 inhibitor, is a recently approved oral antihyperglycemic agent (AHA) for the treatment of adults with T2DM. As the prevalence and cost of T2DM continue to rise, payers seek treatment options to improve care and reduce cost. Budget impact analysis may help payers in the formulary decision-making process. To estimate the three-year budget impact of adding CANA to a hypothetical health plan formulary in place of other branded AHAs. **METHODS:** The model was developed from the perspective of a US health plan with 1 million members. The prevalence of people diagnosed and treated with T2DM is based on US epidemiology statistics. Drug costs were estimated using August 2013 wholesale acquisition costs. Publically available estimates of 2012 market shares of the branded AHAs and estimated 2013, 2014, and 2015 market shares of CANA for Years 1-3 (Year 1: 0.3%, Year 2: 1.8%, Year 3: 2.1%) were used. The base case analysis examined an increasing CANA market share with a proportional decrease in the market share of the other branded drugs. Results are presented as the difference in pharmacy budget, overall and per-member per-month (PMPM). **RESULTS:** Prior to the introduction of CANA, the estimated pharmacy budget for branded non-insulin AHAs in this hypothetical plan was almost $48 MM/year. With CANA added to the formulary, the budget is forecasted to decrease by $71,902 at Year 1, $431,409 at Year 2, and $503,311 at Year 3. The PMPM expenditures decrease from $4.00 when CANA was unavailable to $3.95 at Year 3 of CANA uptake. **CONCLUSIONS:** The results show the positive budget impact of adding CANA to the formulary. As payers continually face rising health care costs, an AHA that can safely and effectively treat T2DM and lower pharmacy costs would be considered highly valuable.

PDB32
BUDGET IMPACT ANALYSIS OF INSULIN ANALOGUES FOR TYPE 1 DIABETES: THE CASE OF THE BRAZILIAN PUBLIC HEALTH SYSTEM (SUS)
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OBJECTIVES: Type 1 Diabetes Mellitus (T1DM) is an endocrine autoimmune disease with onset usually in childhood and which, being chronic, affects people of working age. It affects approximately 0.3% of the population and has high personal and social impact. The National Committee for Incorporation of Technologies in Health System (CONITEC) is responsible for recommending the inclusion or not of technologies in Brazilian public health system and has drawn up a budget impact analysis (BIA) of insulin analogues for the treatment of T1DM for help the decision making. **METHODS:** A BIA of insulin analogues in SUS compared to human insulin (NPH and Regular) was performed. The analysis' time horizon was 5 years, using a diabetes prevalence of 7.6% and 5% of T1DM between them (602,742), considering an annual growth rate of 0.8143% and a market share of 20%, 30%, 40%, 50% and 100%. The mean total insulin dose considered was 0.75IU/kg/day, with an average personal weight of 70kg, which means 52.5IU/day, 50% of each insulin type (basal and rapid). Unit purchase prices of insulins were obtained in the health system prices database and calculated the weighted average. For human insulins, were considered the values of last purchase of the Ministry of Health. **RESULTS:** The budget impact of basal analogues would be R$202.8 million in the 1st year, considering 20% of target population, reaching approximately R$1 billion in 100% of patients. For rapid analogues, the budget impact would be R$62.9 million in the 1st year, reaching R$324.9 million in 100% of patients. **CONCLUSIONS:** This BIA will be essential to support CONITEC's decision about insulin analogues for T1DM patients in Brazil. Treatment costs still impressive, considering that analogues' values reach 10 times the unit values of human insulins, fact that did not happen in other countries where they are already covered.

PDB33
THE ALBIGLUTIDE BUDGET IMPACT MODEL IPAD APPLICATION – A NEW, INTERACTIVE, USER-FRIENDLY PLATFORM DEMONSTRATING THE BUDGET IMPACT OF INCLUDING ALBIGLUTIDE ON MANAGED CARE FORMULARIES
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OBJECTIVES: The budget impact model (BIM) is recognized as a useful tool to help payers assess the economic value of new medicines approved for use. Although they are not considered as robust as cost effectiveness models, they do allow for short-term estimates of pharmacy impact and potential costs/offsets with the inclusion of the new medicine on formulary. Evolving IT platforms, such as the iPad, are offering new opportunities, but also changing end user expectations for these models. Albiglutide is an investigational, once weekly, Glucagon-Like Peptide-1 Receptor Agonist (GLP-1RA) for the treatment of Type 2 Diabetes (T2D). We describe the development of an iPad application (app) derived from an excel-based BIM for use with US payer customers to inform access and reimbursement decisions for albiglutide. **METHODS:** An excel-based BIM estimating the 1-5 year impact of including albiglutide on formulary compared to other available GLP-1RA's was developed as per guidance from AMCP and following ISPOR good research practices. Given the increased use and demand for apps, we transformed the excel model into an app that would allow for modeling simulations to be run on an iPad adhering to these good practice guidelines. **RESULTS:** The excel model was built according to the good practice guidelines and demonstrated the budget impact of introducing albiglutide for the treatment of T2D. The BIM was designed in a way to allow for successful conversion into a standalone app that utilized an improved user interface for interactive discussions around the value of albiglutide with US payers. **CONCLUSIONS:** The app version of the albiglutide BIM is a useful, complementary tool to the excel-based BIM. The app maintains its functionality according to ISPOR and AMCP recommendations.

PDB34
SOMATROPIN DOSE ANALYSIS FOR TREATMENT OF HYPOPITUITARISM IN PUBLIC BRAZILIAN HEALTH SYSTEM (SUS)
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OBJECTIVES: This analysis aims to determine, in International Units (IU), the somatropin volume waste of presentations with 4 IU and 12 IU compared to 16 IU and 36 IU, when used for treatment of Turner Syndrome and for children treatment with disorders of growth due to deficiencies of growth hormone. **METHODS:** The amount waste per month was analyzed, in IU, from the dosage indicated in the Project of Clinical Protocol Guideline (PCDT) for Hypopituitarism of the Brazilian Health Ministry and a comparative analysis was done between presentations of 4 IU/ 12 IU (approved by Ministry) and of 16 IU/ 36 IU. **RESULTS:** The average loss per treatment/month (Turner Syndrome and children with growth disorders) are 18,36 IU, 12,08 IU, 0,38 IU and 2,01 IU presentations with 4IU,12IU, 16IU and 36IU respectively. **CONCLUSIONS:** Therefore, if the SUS adopt presentations of 16IU or 36IU, that could be reduce the losses in an average of 97,5% and 87% respectively in month/patient, minimize the treatment cost, optimize doses number and achieve more patients. Moreover, it is more advantageous because they take up less space for storage and for transportation.

PDB35
IMPACT OF DIABETES IN FAMILY HEALTH SPENDING IN BRAZILIAN POPULATION
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OBJECTIVES: To estimate the impact of the cost of diabetes mellitus (DM) in Brazil based on the ratio ("R") of health care expenses of households with at least one person using medication for diabetes to those without diabetes medication use. **METHODS:** We utilized data from the Family Budget Study (POF – Pesquisa de Orçamentos Familiares), a representative sample of 59.548 households investigated in 2008-2009 by the Brazilian Institute of Geography and Statistics (IBGE). The data were analyzed using Microsoft Excel and R (version 3.0.2). Households were categorized based on the purchase (or no cost receipt) of diabetes medications by family members. Expenses included those for hospitalization, medical consultations, health insurance, drugs and medical supplies. Analyses were conducted for Brazil, for regions and for those with and without health insurance coverage. Results are weighted so as to represent the Brazilian population. **RESULTS:** Households with diabetes (6.2% of the total) more frequently (26.3% vs. 8.5%) had members >60 years of age. Expenses increased with increasing household income. Overall, for Brazil, the ratio "R", adjusted through regression analyses for the age and sex distribution of the family members, household income and regional location, was 1.81 (95%CI 1.69-1.95), indicating that expenses were 81% greater in households where diabetes was present than in those without. The expenses with the purchase of medicines to treat DM increase with increasing income. **CONCLUSIONS:** Health care expenses are notably greater in Brazilian households having family members with diabetes.

PDB36
DIET MODIFICATION IN PATIENTS WITH DIABETES AND ITS ASSOCIATION WITH HEATH CARE UTILIZATION AND EXPENDITURE
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OBJECTIVES: Patients who do not incorporate diet modifications in their therapy regimen may create an undesirable escalation in blood glucose level leading to hyperglycemia and chronic complications. The objective of this study is to investigate the prevalence of diabetic patients who incorporate diet modification in their therapy, and its association with health care utilization and expenditures for the U.S. civilian noninstitutionalized population. **METHODS:** Our study was conducted with a quasi-experimental design approach. Subjects included were patients who reported being diagnosed with diabetes and reported the treatment of diabetes with diet modification from the 2011 Medical Expenditure Panel Survey. A series of weighted inferential statistics were used to test the effect of diet modification on the variables associated with health care use and expenditures. All analyses were accomplished by taking into consideration MEPS sample adjustments using SAS 9.3. **RESULTS:** There were an estimated 21.8 million who have been diagnosed with diabetes in the US in 2011, of which, 4.6 million (21%) did not include diet modification in their therapy. For total health care expenditures, those who did not include diet modification had more expenditure (M = $11,230, SE = 811.84) comparing with those who included diet modifications (M = $10,638, SE = 487.25), t (172) = 25.26, p<.0001. Moreover, total inpatient expenditure for those who did not include diet modification (M = $3,003, SE = 497.3) and patients who included diet modification (M = $2545.66, SE = 251.45), revealed a significant difference between the groups; t (172) = 12.33, p<.0001. **CONCLUSIONS:** The study findings indicated that diabetic patients with diet modification had significant lower utilization and expenditures. Regulating diet is extremely important for people who have diabetes. It can be very effective in preventing or postponing the progression of diabetes, and subsequently managing the cost and utilization associated with it.

PDB37

TREATMENT OF BRAZILIAN CHILDREN WITH GROWTH HORMONE DEFICIENCY AND TURNER SYNDROME: IMPLICATIONS OF A DATA-DRIVEN APPROACH TO GUIDE DECISIONS

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OBJECTIVES: To determine cost savings related to growth hormone (GH) treatment and impact on height outcome when a data-driven approach is used, compared to conventional treatment approach based on experience, in pre-pubertal patients with growth hormone deficiency (GHD) and Turner syndrome (TS). **METHODS:** A model had been developed previously to study height outcome and total GH cost in the presence or absence of data-driven treatment decisions. The proportion of patients for whom height outcome could be improved or GH use could be reduced (i.e. for low compliance, or high or low responders) was estimated using a cohort from the Pfizer International Growth Database (KIGS). This model was adapted to Brazilian patients, for both private and public perspectives, resulting in 4 scenarios: (1) Genotropin 16UI private, (2) Genotropin 36UI private, (3) Genotropin 16UI public and (4) Genotropin 36UI public. Eligible patients were calculated by applying local prevalence rates to infant population (n=13,686 GHD and 15,641 TS). The analysis used a 4-year time horizon. Effects were defined as height outcome after 4 years and total treatment cost. **RESULTS:** The analysis estimated that the data-driven approach could reduce total cost of GH therapy by 7.1% over 4 years for the treatment of Brazilian patients with GHD and by 6.7% for patients with TS, representing a reduction of 7.0% for all subjects. Total costs for all scenarios, when the conventional approach is used were: (1) BRL3,572,931,540.80, (2) BRL3,455,666,095.35, (3) BRL2,789,533,217.78 and (4) BRL2,698,326,760.21; with the data-driven approach, total costs were: (1) BRL3,327,729,748.47, (2) BRL3,218,511,951.60, (3) BRL2,598,094,188.81 and (4) BRL2,513,147,013.46. Despite the reduction in treatment costs, the average height remained unaffected. **CONCLUSIONS:** In Brazil, the data-driven approach could be a useful tool to guide treatment decisions for children with GHD and TS. Total costs of GH treatment could be reduced, without having an impact on growth outcomes.

PDB38

COMPARISON OF THE DOUBLY ROBUST ESTIMATION METHOD TO THE PROPENSITY SCORE METHOD IN A DIABETES-RELATED COMPARATIVE HEALTH ECONOMICS STUDY

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OBJECTIVES: To compare the doubly robust estimation and propensity score methods in a diabetes-related comparative health economics study. **METHODS:** We used large US claims databases that covered 115 million patients between 2000 and 2011. Patients with type 2 diabetes with continuous health insurance were selected into the intensification cohort or non-intensification cohort depending on whether they intensified basal insulin with insulin aspart or remained on treatment with basal insulin without bolus insulin. The study measured the patients' demographic and clinical characteristics, as well as their health care utilization and medical costs in a 6-month pre-baseline period and a 12-month post-baseline period. Doubly robust estimation and propensity score methods were used to examine the impact of intensification on direct medical costs per patient per month (PPPM). **RESULTS:** The study included 26,016 qualified patients with 2,860 in the intensification cohort and 23,156 in the non-intensification cohort. Baseline characteristics were similar between the two cohorts (mean age=58 years, percentage male=52%). Both cohorts also had similar prevalence rates of diabetes-related conditions, and similar utilization and medical costs in the pre-baseline period. The propensity score method indicated that the intensification cohort spent $297.4 PPPM less in the post-baseline period than the non-intensification cohort (p<0.05), while the doubly robust estimation method estimated a $399.0 PPPM cost reduction due to treatment intensification (p<0.05). The doubly robust estimation method was able to control all confounding factors also controlled by the propensity score method, as well as additional confounding factors not controlled by the propensity score method. **CONCLUSIONS:** Although both the propensity score and doubly robust estimation methods revealed cost savings due to treatment intensification with insulin aspart ($297.4 vs. $399.0 PPPM), the propensity score method was less robust against unobserved confounding factors than the doubly robust estimation method.

PDB39

HEALTH CARE COSTS AMONG TYPE 2 DIABETES MELLITUS PATIENTS INITIATING GLUCAGON-LIKE PEPTIDE-1 RECEPTOR AGONIST (GLP-1RA) THERAPY

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OBJECTIVES: To compare health care costs between type 2 diabetes mellitus (T2DM) patients newly initiating exenatide once weekly (exenatide QW), exenatide twice daily (exenatide), or liraglutide (LIRA). **METHODS:** This administrative claims-based retrospective cohort study included patients if they had T2DM, were GLP-1RA-naïve, initiated a GLP-1RA between 2/1/2012-6/30/2012 (initiation date=index), were aged ≥18 years, and had continuous enrollment for 12 months before (baseline) to 6 months after index (follow-up). Outcomes included health care costs (Total/Diabetes-related/GLP-1RAs) and hospitalizations (Total/Diabetes-related). Diabetes-related outcomes included those associated with antidiabetes medications and medical claims coded with T2DM ICD-9-CM codes. Outcomes were compared between index GLP-1RAs using multivariable generalized linear models. Pre-specified sensitivity analyses were performed stratifying by LIRA 1.2mg and LIRA 1.8mg and among patients with ≥60 days' supply of their index GLP-1RA within ≤67 days after index (initial adherers). **RESULTS:** The study sample included 1,610 exenatide QW, 2,690 exenatide, and 6,499 LIRA patients. In multivariable-adjusted models, health care costs varied widely across GLP-1RAs and analyses, with exenatide generally being associated with the lowest adjusted health care costs (cost ratios vs. exenatide QW ranging from 0.762 [p<0.001] for GLP-1RA costs to 0.908 [p<0.001] for Total costs among initial adherers). LIRA 1.8mg was generally associated with the highest adjusted health care costs (cost ratios vs. exenatide QW ranging from 1.039 [p=0.080] for Total costs to 1.157 [p<0.001] for GLP-1RA costs among initial adherers). LIRA 1.2mg was generally associated with the highest adjusted odds of hospitalizations (odds ratios vs. exenatide QW ranging from 1.312 [p=0.317] for diabetes-related hospitalizations to 1.528 [p<0.036] for total hospitalizations among initial adherers). **CONCLUSIONS:** Among patients newly initiating exenatide QW, exenatide, or LIRA, differences existed in health care costs and hospitalization in first 6 months of treatment. LIRA 1.8mg and 1.2mg were generally associated with the highest adjusted health care costs and odds of hospitalization, respectively.

PDB40

COMPARATIVE COST ANALYSIS FOR TREATING GROWTH HORMONE DEFICIENCE IN BRAZIL: PEN VERSUS SYRINGES

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OBJECTIVES: To compare costs of two delivery systems (pen vs. vials/syringes) of recombinant human growth hormone (rGH) in Brazilian GH deficient patients. **METHODS:** A budgetary impact model was developed to calculate total costs based on product waste (difference between prescribed dose and actual delivered dose, based on dosing increments for pens [Pfizer Gocquick 16UI and 36UI – P16 and P36, respectively] and a fixed-percent waste described in the literature for vials [Hormotrop 4UI and 12UI – V4 and V12, respectively]) and drug cost. Annual acquisition costs were calculated based upon total milligrams delivered, for pediatric and adult patients. Dose was 0,03mg/kg/day for children and 0,15mg/day for adults. It was considered both public and private payer perspectives. **RESULTS:** For children, calculated waste was 2.56% and 7.69% for P16 and P36, respectively; for adults, it was 0% for both versions. Waste for vials was fixed in 23% for all scenarios. From the public payer perspective, total cost per treatment-year for children was BRL26,256.96, BRL25,396.38, BRL33,702.73 and BRL32,683.92 for P16, P36, V4 and V12, respectively and waste cost was BRL2,019.77, BRL1,953.57, BRL7,751,63 and BRL7,517.30; for adults, total cost per treatment-year was BRL3,750.99, BRL3,628.05, BRL5,185,04 and BRL5,028.30 for P16, P36, V4 and V12, respectively and waste cost was BRL0.00, BRL0.00, BRL1,192.56 and BRL1,156,51. From the private payer perspective, total cost per treatment-year was, respectively, BRL32,027.03, BRL32,526.11, BRL43,164.19 and BRL41,858.67 for P16, P36, V4 and V12, and waste cost was BRL2,586.80, BRL2,502.01, BRL9,927.76 and BRL9,627.49 in children; for adults, total cost per treatment-year was BRL4,804.05, BRL4,646.59, BRL6,640.64 and BRL6,439.79 for P16, P36, V4 and V12, respectively and waste cost was BRL0.00, BRL0.00, BRL1,527.35 and BRL1,481.15. **CONCLUSIONS:** For pediatric and adult patients, rGH administration through pens was less costly, and had less waste than vials/syringes, from both public and private perspectives. P36 use was the best option in this analysis.

PDB41

HEALTH CARE RESOURCE UTILIZATION AND COSTS ASSOCIATED WITH VARIOUS STAGES OF CHRONIC KIDNEY DISEASE AMONG TYPE 2 DIABETES MELLITUS PATIENTS

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OBJECTIVES: Uncontrolled type 2 diabetes mellitus (T2DM) increases the risk of chronic kidney disease (CKD). This study examined the health care resource utilization (HRU) and costs among T2DM patients with varying degrees of CKD using electronic health records. **METHODS:** This retrospective study was conducted using electronic health records from US integrated delivery networks from 2008 to 2012. Adult T2DM patients (first T2DM diagnosis denotes index date) with continuous medical activity during the 6-month pre- and 12-month post-index period and lab values for CKD classification were selected. CKD stages were assessed using the estimated glomerular filtration rate and urine albumin to creatinine ratio. HRU/costs by CKD stage (Stages 1, 2, 3A, 3B, and 4) were captured from the 12-month follow-up data and compared to T2DM patients without CKD (no CKD). Unit cost approach was applied to derive medical encounter costs. Multivariate regression analyses were